Site Visits & Descriptions

Tuesday, May 13, 2003

Tour A: National Fuel Cell Research Center Combustion Lab, UC Irvine
Time: 8:30 a.m.

National Fuel Cell Research Center (NFCRC)
The mission of the NFCRC is to facilitate and accelerate the development and deployment of fuel cell technology and fuel cell systems; promote strategic alliances to address the market challenges associated with the installation and integration of fuel cell systems; and to educate and develop resources for the various stakeholders in the fuel cell community.

UCI Combustion Laboratory (UCICL)
The UCICL participates in the advancement of continuous combustion technology. The lab maintains a focus on gas turbines, boilers, furnaces and related technologies while researching difficult issues to develop technical solutions. The UCICL strives to bridge between engineering science and practical systems while forming strategic alliances between university, industry, agencies and national labs. The combustion lab has two components, each with a different emphasis. The University Gas Turbine Laboratory concentrates on high performance low emission combustors by evaluating combustor active control, staged combustors, advanced fuel injection techniques and next generation propulsion materials. The UGTL includes programs in catalytic combustors and performance analysis of duel fuel and biomass fuel systems. The second component, the University Boiler and Furnace Laboratory conducts research and performs characterization of systems including industrial generic burners, furnace burners and industrial boiler-burners. The UBFL also has programs in burner active control and air toxic emissions analysis.

Tour B: B. Braun Pharmaceuticals (3.5 MW gas turbine and 2.8 MW gas turbine) & Southgate/Huntington Park at Biola University (1.3 MW Clean IC Engine)
Time: 8:30 a.m.

B.Braun:


The cogeneration plant at B. Braun was expanded in 1994 with the commissioning of a new 3.5 MW Centaur 40 gas turbine generator set which joined the original 2.8 MW Centaur gas turbine generator that had logged over 85,000 hours since installation in October 1981. The new turbine generator set is equipped with a supplementary-fired heat recovery steam generator. Each of the gas turbines is equipped with water injection and SCR. The cogeneration plant has an intertie that allows it to operate in parallel with the local utility company. The cogeneration units can meet all of the manufacturing plant's base-load and electrical steam demands and their overall thermal efficiency exceeds 70 percent.

Biola University:
The Caterpillar 3516B Generator set is rated 1 MW continuous and equipped with an SCR and exhaust heat recovery. The installation was commissioned in January 2003 by Hawthorne Power Systems of San Diego. A new absorption chiller and CEMS system was installed as part of system upgrade to the original two existing Caterpillar G3512 generator sets (installed in 1990) to assure complete system emissions compliance.

Tour C: Two Town Center, Costa Mesa (1000 kW CHP) and City Centre, Fountain Valley (220 kW PV)
Time: 8:30 a.m.

Two Town Center:
1000 kW cogeneration plant with absorption chiller serves a 714,000 square foot building and provides 69% of building total electrical requirement and 50% of building chilled water requirement. Installation provides 98% reduction in NOx emissions compared to utility when generating power. Future capability will provide 75% of building's hydronic heating requirement. System has blackout protection available for building load or specific tenant load.

City Centre:
220 kW PV installation serves an area totaling 100,600 square feet and provides approximately 17% of buildings' combined total electric requirement. Installation provides 100% reduction in NOx emissions compared to utility when generating power.

Thursday, May 15, 2003

Tour D: Oceangate Tower, Long Beach (400kW CHP) and 444 West Ocean, Long Beach (600 kW Chiller)

Time: 9:00 a.m.

Oceangate Tower:
400 kW cogeneration plant with heat recovery and absorption chiller serves a 211,000 square foot building and provides 48% of building total electric requirement and 78% of building chilled water requirement. Installation affords a 98% reduction in NOx emissions compared to utility when generating power. Blackout protection is available for building load or specific tenant load.

444 West Ocean:
600 kW system serves a 190,000 square foot building to provide approximately 86% of building's total electric requirement, 56% of building's chilled water requirement, and 95% of building's hydronic heating requirement. Installation affords a 98% reduction in NOx emissions compared to utility when generating power. Blackout protection is available for building load or specific tenant load. Hot water recovery is approximately 1,240 MMBtu per year.

Tour E: USPS Marina Processing/Distribution Center (127 kW PV) & GSA Federal Building (245kW PV)
Time: 9:00 a.m.

USPS:
The United States Postal Service (USPS) worked with FEMP to install a photovoltaic (PV) DER system at the USPS Marina Processing and Distribution Center in Marina del Rey, California, with assistance from the Lawrence Berkeley National Laboratory, the Los

Angeles Department of Water and Power, PowerLight Corporation, and other private entities. The result is a 127-kilowatt (kW) rooftop PowerGuard® PV system—the largest roof-integrated Federal system in the nation—now generates electricity for the Marina Center directly from sunlight. This PV system, which produces approximately 228,600 kWh per year, is expected to shave up to 10% off the facility's 1.2-MW peak power demand and save approximately $25,000 per year in utility costs. The system incorporates PV cells backed with polystyrene foam to produce power, increase the building's thermal insulation, and extend the life of the roof.

GSA Federal building:
The 245.3 kW photovoltaic system at the North LA Federal Building, completed on April 8, 2003, has a projected system electrical output of 297,450 kWh per year. Over the 25 year life of the 2,054 PowerGuard TL system, the solar generated electricity will reduce emissions of nitrogen oxides by 5,000 pounds and carbon dioxide by almost 8,000 tons. The will spare the environment tons of harmful emissions such as nitrogen oxides, sulfur dioxide, carbon dioxide and carbon monoxide, major contributors to smog, acid rain and global warming. These emissions reductions are equivalent to planting 417,155 trees, removing 2,100 cars from the roadways, or not driving 26,268,951 miles. A great deal of the project's cost was provided by both Los Angeles Department of Water and Power (LADWP) under it's Solar Incentive Program, and the Southern California Gas Company Self-Generation Program.

Tour F: B. Braun Pharmaceuticals (3.5 MW gas turbine and 2.8 MW gas turbine) & Southgate/Huntington Park at Biola University (1.3 MW Clean IC Engine)
Time: 9:00 a.m.

B. Braun:
3.5 MW Centaur 40 gas turbine generator installed in 1994 and 2.8 MW Centaur gas turbine generator installed in 1981; both with water injection and SCR. The cogeneration plant at B. Braun was expanded in 1994 with the commissioning of a new 3.5 MW Centaur 40 gas turbine generator set which joined the original 2.8 MW Centaur gas turbine generator that had logged over 85,000 hours since installation in October 1981. The new turbine generator set is equipped with a supplementary-fired heat recovery steam generator. Each of the gas turbines is equipped with water injection and SCR. The cogeneration plant has an intertie that allows it to operate in parallel with the local utility company. The cogeneration units can meet all of the manufacturing plant's base-load and electrical steam demands and their overall thermal efficiency exceeds 70 percent.

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